CLAIMS

What we claim is:

1. A fabric adapted for use in airbag cushions, especially side curtain airbags providing rollover protection, comprising:

an airbag fabric having at least one coating, film, fabric or layer on the exterior surface thereof, having at least one of abrasion resistance, puncture resistance, and combinations thereof, and having an ASTM D 4833 index puncture resistance greater than about 210 lbs. and ASTM F 1342 puncture resistance greater than about 10 lbs.

2. A fabric adapted for use in airbag cushions, especially side curtain airbags providing rollover protection, comprising:

an airbag fabric covered with a film layer, wherein said fabric is adapted for use in an airbag having a characteristic leak-down time after inflation of at least 5 seconds.

3. A fabric adapted for use in airbag cushions, especially side curtain airbags providing rollover or impact protection, comprising:

an airbag fabric having at least one of a woven and knit fabric laminated to the exterior surface thereof.

4. An airbag fabric having an ASTM D 4833 index puncture resistance greater than about 210 lbs. and ASTM F 1342 puncture resistance greater than about 10 lbs.

5. A puncture resistant airbag fabric comprising at least two layers of fabric, with at least one layer being coated airbag fabric and the other being a woven or knitted fabric.

6. A puncture resistant airbag fabric comprising at least two laminated layers of fabric adapted for use on the side of an airbag facing the outside of a vehicle when inflated.

7. The fabric as recited in at least one of claims 1 and 5, wherein said coating is at least one polymer elastomer, or the like such as silicone or polyurethane.

8. The fabric as recited in claim 1, wherein the coating, film or layer further includes a polyurethane film laminated or placed over the coated fabric.

9. The fabric as recited in claim 1, wherein the coating, film or layer further includes an outer layer of fabric laminated over the coated fabric.

10. The fabric as recited in claim 9, wherein the fabric is laminated using an

elastomeric coating, film, adhesive, or combination thereof.

11. The fabric as recited in at least one of claims 3, 5, 6, and 9, wherein said outer layer of fabric is constructed of at least one of polyester, polyamide, polyolefin, polyurethane, or combinations thereof.

12. An airbag cushion comprising the fabric of at least one of claims 1, 2, 3, 4, 5, and 6 on at least the exterior surface thereof.

13. The airbag cushion of claim 12, wherein said fabric is coated with a laminate film, and wherein said airbag cushion exhibits a characteristic leak-down time after inflation of at least 5 seconds.

14. The airbag cushion of claim 13, wherein said film is silicone free.

15. The airbag cushion of claim 13, wherein said film comprises polyurethane, polyamide, or copolymer elastomers.

16. The airbag cushion of claim 13, wherein said coated fabric is woven from polyamide yarns.

17. The airbag cushion of claim 16, wherein said polyamide yarns are formed from nylon 6,6 fiber.

18. The airbag cushion of claim 16, wherein said polyamide yarns are multifilament yarns characterized by a linear density of about 210-630 denier.

19. The airbag cushion of claim 18, wherein said multifilament yarns are characterized by a filament linear density of about 7 denier per filament or less.

20. The airbag cushion of claim 13, wherein said film is present on said airbag fabric surface in an amount of about 0.5 to 10.0 mils thick or ounces per square yard.

21. The airbag cushion of claim 20, wherein said film is present on said airbag fabric in a thickness of at most 5 mils or in an amount of at most 5 ounces per square yard.

22. The airbag cushion of claim 12, wherein said fabric is coated with a film layer; wherein said film possesses a tensile strength of at least 2,000 psi and an elongation at break of at least 180%; and wherein said airbag cushion exhibits a characteristic leak-down time after inflation of at least 5 seconds.

23. The airbag cushion of claim 22, wherein said film comprises polyurethane.

24. The airbag cushion of claim 22, wherein said coated fabric is woven from polyamide yarns.

25. The airbag cushion of claim 24 wherein said polyamide yarns are formed from nylon 6,6 fiber.

26. The airbag cushion of claim 24, wherein said polyamide yarns are multifilament yarns characterized by a linear density of about 210-630 denier.

27. The airbag cushion of claim 26, wherein said multifilament yarns are characterized by a filament linear density of about 7 denier per filament or less.

28. The airbag cushion of claim 22, wherein said film is present on said airbag fabric surface in a thickness of about 0.5 – 10.0 mils or an amount of about 0.5 – 10.0 ounces per square yard.

29. The airbag cushion of claim 22, wherein said film is present coated on said airbag fabric surface in a thickness of about 3 mils or an amount of about 3 ounces per square yard.

30. An inflatable fabric comprising the fabric of at least one of claims 1, 2, 3,

4, 5, and 6.

31. The fabric as recited in claim 30 wherein there are at least two layers of fabric in certain discrete areas of the fabric and at least one single fabric layer at a discrete area within said fabric.

32. The fabric of claim 31 wherein said at least two layers of fabric within said inflatable fabric are formed from one type of weave pattern.

33. The fabric of claim 32 wherein the weave pattern of said at least two layers of fabric within said inflatable fabric is a plain weave pattern.

34. The fabric of claim 31 wherein at least two discrete areas of single fabric layers are present within said inflatable fabric, and wherein said at least two single fabric layers are separated by an area of double layer fabric.

35. The fabric of claim 34 wherein said at least two single fabric layer areas are seams through the inflatable fabric which run parallel to each other.

36. The fabric of claim 34 wherein said at least two single fabric layer areas are constructed from basket weave patterns containing an even number of yarns.

37. The fabric of claim 34 wherein said separator double fabric layer between

said two single layers of fabric comprises an even number of weft yarns.

38. The fabric of claim 37 wherein said separator double fabric layer comprises at most 12 weft yarns and at least 2 weft yarns.

39. The fabric of claim 38 wherein said at least two single fabric layers are constructed solely from two-by-two basket weave patterns and said separator double fabric layer comprises four weft yarns.

40. The fabric as recited in claim 30, wherein said fabric has at least two layers of fabric in certain discrete areas of the fabric and at least one single fabric layer at a discrete area within said fabric, wherein the weave diagram for such a fabric does not exhibit more than three consecutive filled or unfilled blocks in any row or column.

41. The fabric as recited in claim 30, wherein said fabric has at least two layers of fabric in certain discrete areas of the fabric and at least one single fabric layer at a discrete area within said fabric, wherein only two separate weave densities are present within the fabric structure in the area of the junction of the two layers and single fabric layer.

42. An airbag structure that does not exhibit significant change in pressure characteristic when collided with a broken glass surface at its peak pressure.

~~43.~~ A puncture resistant airbag comprising different constructions or coatings on the side facing the occupant and on the side facing outside, where the side facing the occupant has an ASTM F 1342 puncture resistance of less than about 12 lbs. and the side facing the outside of the vehicle has an ASTM F 1342 puncture resistance of greater than about 10 lbs.

~~44.~~ In an airbag cushion, the improvement comprising:

at least one exterior surface having an inner fabric layer, an intermediate coating, primer or adhesive layer, and an outer film or fabric layer, and having an ASTM D 4833 index puncture resistance greater than about 210 lbs. and ASTM F 1342 puncture resistance greater than about 10 lbs.

45. The airbag of claim 44, wherein said outer film or fabric layer is a polyurethane film, and said coating, primer or adhesive layer is a polyurethane coating.

46. The airbag of claim 45, wherein said film is about 3 mils thick and said coating is about 1.2 ounces per square yard.

47. The airbag of claim 44, wherein said airbag is at least one of puncture resistant and abrasion resistant.

48. The airbag of claim 44, wherein said at least one surface having an

ASTM F 1342 puncture force of at least about 10 lbs.

49. The airbag of claim 45, having a puncture force of at least about 25 lbs.

50. The airbag of claim 41, wherein said at least one surface having an ASTM D 4833 index of at least about 250 lbs.

51. The airbag of claim 47, having an index of at least about 300 lbs.

52. An airbag cushion adapted for use between an occupant and a window comprising:

an inner or inside surface, wall, construction, or coating adjacent the occupant, and

an outer or outside surface, wall, construction, or coating adjacent the window,

wherein said inner or inside surface, wall, construction, or coating adjacent the occupant is at least one of lighter, softer, more flexible, and less abrasive than said outer or outside surface, wall, construction, or coating adjacent the window of said vehicle.